GROUND WATER RULE

Office of Public Health
Center for Environmental Health Services
Engineering Services

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RULE APPLICABILITY

- The Ground Water Rule applies to:
  - PWSs (CWSs and NCWSs) that use ground water sources, in whole or in part (including consecutive systems that receive finished ground water from another PWS)
- The Ground Water Rule does not apply to:
  - PWSs that combine all of their ground water with surface water or ground water under the direct influence of surface water (GWUDI) prior to treatment under the Surface Water Treatment Rule (SWTR)

Risk Targeted Strategy Includes:

- Regular GWS sanitary surveys to check for significant deficiencies in eight key operational areas
- A flexible program for identifying higher risk systems through existing TCR monitoring and State determinations
- Ground water source monitoring to detect fecal contamination at targeted GWSs that do not provide 4-log treatment of viruses

SANITARY SURVEYS

- Purpose
  - A comprehensive examination of a water system to identify potential sources of contamination
- Scope
  - All ground water systems
- Frequency
  - Every 3 years for CWS; 5 years for NCWS

SANITARY SURVEYS

- Eight Elements of a Sanitary Survey
  - Source
  - Treatment
  - Distribution system integrity
  - Finished water storage
  - Pumps, pump facilities, and control
  - Monitoring, reporting, and data verification
  - Water system management and operations
  - Water system operator compliance with State requirements

SANITARY SURVEYS

- States must identify signifcant deficiencies
- States must have corrective action authority
- Systems must fix significant deficiencies or apply treatment

SANITARY SURVEYS

- If a significant deficiency is identified as a result of a sanitary survey, the system must take corrective action.
- If they system does not complete corrective action within 120 days of receiving notification from the State, or is not in compliance with a State-approved corrective action plan and schedule, the system will be in violation of the treatment technique requirements of this rule
- Treatment technique violation requires public notification

SOURCE WATER MONITORING

- Requires triggered source water monitoring and provides States with the option to require assessment source water monitoring
- Source water monitoring is an effective tool to target at-risk systems that must take corrective action to protect public health
- Indications of risk may come from total coliform monitoring, hydrogeologic sensitivity analyses, or other system specific data and information

Triggered Source Water Monitoring

- A GWS that does not provide at least 4-log treatment of viruses must conduct triggered source water monitoring upon being notified that a TCR sample is total coliform-positive
- Within 24 hours of receiving the total coliform-positive notice, the system must collect at least one ground water sample from each ground water source unless the GWS has an approved triggered source water monitoring plan that specifies the applicable source for collecting the source samples
- The GWS must test the ground water for the presence of one of three State-specific fecal indicators (*E.Coli*, enterococci, or coliphage)

Triggered Source Water Monitoring

- If a consecutive ground water system has a total coliform-positive sample it must notify the wholesale system(s) within 24 hours of being notified of the total coliform-positive sample
- A wholesale ground water system that receives notice from a consecutive system it serves that a sample is total coliform-positive must, within 24 hours of being notified, collect a sample from its ground water source(s) and analyze it for a fecal indicator

Triggered Source Water Monitoring

QUESTION

- If the source sample is fecal indicator-positive, this rule requires the GWS to notify the State and the public

Who will collect these samples?

- And, unless directed by the State to take immediate corrective action, the GWS must collect and test five additional source water samples for the presence of the same State-specified fecal indicator within 24 hours. If any one of the five additional source water sample tests positive, the GWS shall notify the State and the public and comply with the treatment technique requirements

Assessment Source Water Monitoring

- States have the option of requiring GWSs to conduct assessment source water monitoring. This gives the State the opportunity to target higher risk GWSs for additional source water monitoring and evaluation

- EPA recommends that States use Hydrogeologic Sensitivity Assessments (HSAs) and TCR/triggered source water monitoring results, along with other information to identify higher risk systems for assessment source water monitoring

HYDROGEOLOGIC SENSITIVITY ASSESSMENT

- Purpose
  - To identify sensitive sources that will be required to perform routine monitoring
- Frequency
  - One-time assessment

HYDROGEOLOGIC SENSITIVITY ASSESSMENT

- Two key components of a hydrogeologic assessment:
  - State determines whether a system's wells are located in a sensitive aquifer type (karst, gravel, or fractured bed rock)
  - State determines whether a hydrogeologic barrier is present that protects wells in a sensitive aquifer type
- States may use information collected through the SWAP for the hydrogeologic sensitivity assessment

Treatment Technique Requirements

- GWSs must comply with the treatment technique requirements if a significant deficiency is identified during a sanitary survey or if one of the five additional ground water source samples (or at State discretion, the initial source sample) has tested positive for fecal contamination
- The treatment technique requires that a GWS implement at least one of the following corrective actions:

Treatment Technique Requirements (corrective actions)

- Correct all significant deficiencies
- Provide an alternate source of water
- Eliminate the source of contamination
- Provide treatment that reliably achieves 4-log treatment of viruses

Treatment Technique Requirements

- A ground water system that fails to maintain at least 4-log treatment of viruses (using inactivation, removal, or a State-approved combination of 4-log virus inactivation and removal) before or at the first customer for a ground water source is in violation of the treatment technique requirement if the failure is not corrected within four hours of determining the system is not maintaining at least 4-log treatment of viruses before or at the first customer
- Treatment technique violations require public notification

Compliance Monitoring

- All GWSs that provide at least 4-log treatment of viruses using chemical disinfection, membrane filtration, or a State-approved alternative treatment technology must conduct compliance monitoring to demonstrate treatment effectiveness.

Compliance Monitoring Requirements

- Chemical Disinfection
  - Ground water systems serving greater than 3,300 people
    - Continuously monitor the residual disinfectant concentration at a location approved by the State
    - Record the lowest residual concentration each day that water from the ground water source is served to the public
    - Must maintain the State-determined residual disinfectant every day the ground water system serves water from the ground water source to the public
    - If there is a failure in continuous monitoring equipment must conduct grab samples every four hours
    - System must resume continuous monitoring within 14 days

Compliance Monitoring Requirements

- Ground water systems serving 3,300 or fewer people
  - Must monitor and record residual disinfectant concentration daily during peak hourly flow or some other time specified by the State at a location approved by the State
  - If any daily measurement falls below the State-determined residual disinfectant concentration, the ground water system must take follow-up samples every four hours until the residual disinfectant concentration is restored to the State-determined level
  - May alternately monitor continuously and meet those requirements

Compliance Monitoring Requirements

- Membrane Filtration
  - Ground water system that uses membrane filtration must monitor the membrane filtration process in accordance with all State-specified monitoring requirements and must operate the membrane filtration in accordance with all State-specified compliance requirements
  - Ground water system that uses membrane filtration is in compliance with the requirement to achieve at least 4-log removal of viruses when:
    - The membrane has an absolute molecular weight cut-off (MWCO), or an alternate parameter that describes the exclusion characteristics of the membrane, that can reliably achieve at least 4-log removal of viruses;

Compliance Monitoring Requirements

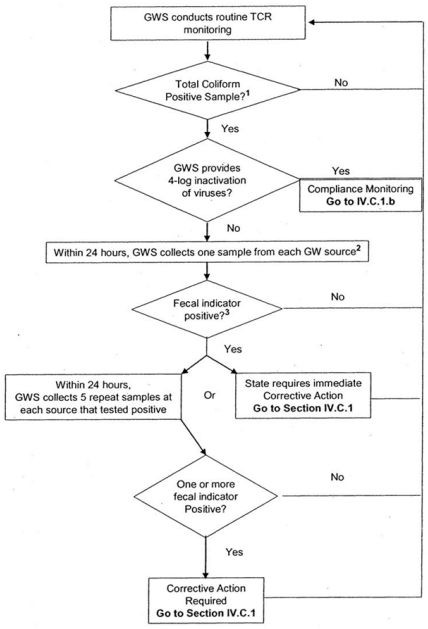
    - The membrane process is operated in accordance with State-specified compliance requirements; and
    - The integrity of the membrane is intact
- Alternative Treatment
  - Ground water system that uses a State-approved alternative treatment by providing at least 4-log treatment of viruses (using inactivation, removal, or a State-approved combination of 4-log virus inactivation and removal) before or at the first customer must:
    - Monitor the alternative treatment in accordance with all State-specified monitoring requirements; and

Compliance Monitoring Requirements

- Operate the alternative treatment in accordance with all compliance requirements that the State determines to be necessary to achieve at least 4-log treatment of viruses

- Failure to meet these monitoring requirements is a monitoring violation and requires the ground water system to provide public notification

Figure IV-2: Triggered Source Water Monitoring Requirements



[1]Answer "no" if the sample is invalidated under 141.21(c) or the State determines that the cause of the total coliform-positive sample directly relates to the distribution system
[2]If approved by the State, systems with more than one ground water source may monitor at representative ground water source(s) according to a triggered source water monitoring plan
[3]*E. coli*, enterococci, or coliphage

Reporting Requirements

- Ground water systems must provide the following information to the State:
  - Ground water system conducting compliance monitoring must notify the State any time the system fails to meet any State-specified requirements if operation in accordance with requirements is not restored within four hours
  - The system must notify the State as soon as possible but in no case later than the end of the next business day
  - System must notify the State within 30 days after completing a corrective action

Recordkeeping Requirements

- Documentation of corrective actions shall be kept for a period of not less than **ten** years
- Documentation of notice to the public shall be kept for a period of not less than **three** years
- Record of decisions and invalidation of fecal indicator-positive ground water source samples shall be kept for a period of not less than **five** years
- For consecutive systems, documentation of notification to the wholesale system(s) of total-coliform positive samples that are not invalidated shall be kept for a period of not less than **five** years

Recordkeeping Requirements

- For systems, including wholesale systems, that are required to perform compliance monitoring
  - Records of State-specified minimum disinfectant residual shall be kept for a period of not less than **ten** years
  - Records of the lowest daily residual disinfectant concentration and records of the date and duration of any failure to maintain the State-prescribed minimum residual disinfectant concentration for a period of more than four hours shall be kept for a period of not less than **five** years

Recordkeeping Requirements

- Records of State-specified compliance requirements for membrane filtration and of parameters specified by the State for State-approved alternative treatment and records of the date and duration of any failure to meet the membrane operating, membrane integrity, or alternative treatment operating requirements for more than four hours shall be kept for a period of not less than **five** years

DATES

- Ground Water Rule Effective Date is **January 8, 2007**
- Ground Water Rule Compliance Date is **December 1, 2009**

DATES

- Ground water systems that provide 4-log inactivation of viruses before or at the first customer must submit necessary documentation for review and approval of such treatment to the DHH-OPH District offices by September 1, 2009
- Ground water systems with more than one source that that would like to only do source water sampling at representative sources must submit for review and approval a triggered source water monitoring plan that identifies one or more ground water sources that are representative of each monitoring site in the system's TCR monitoring plan to the DHH-OPH District offices by September 1, 2009

Resources

- You can access the Federal Ground Water Rule and other info online at:

  http://www.epa.gov/safewater/disinfection/gwr/regulation.html

Ground Water Rule Workshop

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